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Contents for Week of October 21, 1929. Vol. VIII. No. 14.

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A STARLING GETS HIS MIGRATION TICKET

(See Bulletin No. 1)

HOW TEACHERS MAY OBTAIN THE BULLETINS

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Lindberghs Accompanied by Flying Escort That Numbers Millions

THE Lindberghs are not the only ones flying south this fall.

Nor are they the first travelers to wing their way from Florida through the West Indies to South America.

Perhaps the occupants of "We-1929," whirling along to the Guianas, saw the early birds of the annual fall migration making their way south. Millions of birds have left their summer homes and are now on their way to winter residences in the West Indies, Central America and South America.

Some of them will fly much farther south than Col. Lindbergh recently flew.

Warblers Make Non-Stop Flights across Caribbean Sea

Terns and other shore birds travel more widely than any other feathered creatures. The Golden Plover raises a brood in Ungava or Northern Labrador and in the fall wings out over the open ocean, never stopping until it reaches Bermuda. On it flies, pausing perhaps at the Bahamas, or the Lesser Antilles, on the way to South America. The first of the Golden Plovers have been reported arriving in Paraguay before the last have left the Labrador breeding grounds. They "winter" on the Argentine pampas where the southern hemisphere's summer sun makes food plentiful.

Even unadventurous-appearing Warblers travel far to escape the cold of winter. Of our American species and subspecies, 22 winter in the West Indies, 44 go to Mexico, 37 push on to Central America, while 22 reach South America. It is a fact for never-ceasing wonder that some warblers and other small birds fly 500 miles across the Caribbean Sea without resting.

Probably the most remarkable non-stop, oversea flights are those of the Pacific Golden Plover. Coming south from Alaska, it touches at the Aleutians and then takes off for Hawaii. It crosses 2,800 miles of open ocean. How Plovers are able to locate the Hawaiian Islands in the middle of the North Pacific is a mystery of Nature.

Arctic Tern Makes Longest Bird Flight on Record

Birds that nest in the southern hemisphere also have remarkable records for travel. The Slender-billed Shearwater makes a circuit of the Pacific Ocean. It breeds in southern Australia, flies north along the Asia coast, and returns south by the American coast!

The finding of a dead bird on a beach in South Africa may unlock a secret which has long puzzled American naturalists.

The bird, an Arctic Tern, carried a small metal band on one leg with the number 548138 and, in abbreviated form, the address of the Bureau of Biological Survey, United States Department of Agriculture.

O. L. Austin banded the Tern at Turnevik Bay, Labrador, on July 23, 1928. Four months later it was found in South Africa.

Scientists have recognized the Arctic Tern as the Lindbergh of the bird world. It makes the longest migration of any bird, summering in the Arctic and summering again in the Antarctic. Eleven thousand miles to a summer resort is an all-time record.

© *Photograph from José B. Alemany*

DANCING THE "SARDANA," THE NATIONAL CATALAN DANCE, IN THE CENTRAL SQUARE OF ANDORRA LA VIEILLE (See Bulletin No. 2).

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When Waterpower Comes to Andorra

MODERN hydroelectric power is coming to Andorra, the oldest and most isolated republic in the world.

Spain and France, sponsors for the tiny state in the Pyrenees Mountains, have agreed to develop the Andorran waterpower resources. The Andorran Government, according to the pact, will find itself $1,200 richer annually. This sum, paltry to most republics, is a fortune in Andorra, which has only two salaried government officials.

The Andorrans are not much changed from the swart, stolid peasants to whom Charlemagne granted self-government in the eleventh century.

The President of France Is Prince of Andorra

Their somber little republic is dwarfed by the mighty mountains surrounding it, and the peasantry reflect the bleakness of the countryside in their mode of living and type of houses. Their homes are built of native stone topped by overhanging black slate roofs. In contrast to the Spanish balconies of wrought iron, balconies of Andorran houses are of plain, unpainted wood.

Andorra's greatest length is 25 miles. It has almost 6,000 inhabitants, and the population has not fluctuated 200 people in the last 600 years. Despite a healthful climate, the Andorrans are of poor physique. Intermarriage for centuries has weakened their original hardiness. Their life still is exceedingly rigorous. Nevertheless visitors find the Andorran a courteous and gentle host.

The people of Andorra call their country "Los Valles." They are politically independent, although they are under the protection of the Bishop of Seo d'Urgel on the Spanish side of the frontier, and the President of France who, as successor to Henri IV, is Prince of Andorra. They speak Catalan, a provincial dialect of Spain, harsher than Castilian.

Capitol Offers Board, Room and Stable

There are six cantons in the Republic, each represented in the Council. The Casa del Valle, meeting place of the Council, dates from 1588. Not only do the Council members meet in Casa del Valle, they also eat there, sleep there and lodge their mules in the stables beneath the Council chambers. Andorra is a paradise for the legislator in more ways than one. Its twenty-four congressmen are convoked four times a year, they sit for only two days, and, more often than not, there are not enough political questions to be discussed to keep them busy for that period.

Smuggling in Andorra is not a vice. It is a virtue—if the guards can be eluded. The tobacco grown in the little state is smuggled into France and sold at a good profit.

The strict watch put on smuggling by the French and Spanish customs officers of late years has practically stopped the chief source of revenue. Lack of money is now Andorra's chief cause for worry.

The President a Farmer When He Isn't President

The President of Andorra, who is a farmer on other than state occasions, occupies what is perhaps the one mansion now to be found in the principality.

By what route does the Arctic Tern fly from up near the North Pole to the Antarctic? That has been the question.

Durban Man Writes Facts to National Geographic Society

Mr. H. J. S. Heather of Durban, Natal, has communicated to the National Geographic Society the circumstances of the important find which may answer the question:

"The Tern was picked up by Mr. Wackrill, of Johannesburg, a few miles south of Port Shepstone. His discovery, the Biological Survey wrote the finder, was 'the most remarkable case that has been reported in any country.' It suggests that the Arctic Tern leaves the northern reaches of North America, flies to Portugal, crosses the length of Africa, and then 'hops' to the Antarctic continent."

This new evidence adds about 2,000 miles to the previous 11,000 miles estimated airline flight of the species. The Arctic Tern enjoys more daylight than any other living creature because it lives in regions where the sun never sets and only experiences night on its semiannual journeys across the Equator.

Promotion of bird-banding has revealed many unknown and unsuspected facts of bird migrations and habits. The practice has supplied facts on which practical plans for the conservation of bird life can be made.*

*"Bird Banding, the Telltale of Migratory Flight: A Modern Method of Learning the Flightways and Habits of Birds," by E. W. Nelson, *National Geographic Magazine*, January, 1928.

© Photograph by R. D. Sloane

HE CULTIVATES THE FRIENDSHIP OF WILD GEESE

Mr. Jack Miner was once a professional hunter. Now he protects wild life. Large flocks of Canada geese regularly visit his bird refuge at Kingsville, Ontario. Each band that he places on a bird's leg contains a verse of Scripture, and he calls the birds on which he places them his missionaries.

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Samarkand Turns from Oriental Rugs to Cotton

SAMARKAND in Turkestan aspires to active trade competition with New Orleans, Houston and Galveston if plans adopted by the Soviet Government prove successful.

Samarkand, Bokhara and Tashkent will be "cotton towns" according to Russia's $250,000,000 program to make the Turkestan desert white with bursting cotton bolls. An American engineer has been selected to direct a vast irrigation project utilizing the Sur Darya and Amu Darya. The latter is better known as the Oxus.

Turkestan already supplies half of the Soviet cotton needs. The Russian Government believes that irrigation will increase production at a rapid rate.

Once "Hub of Universe" with Million Population

Samarkand, with its cotton future, is one of the staunchest Moslem regions in all the vast territory of U. S. S. R. According to ancient legend, Samarkand was the head of Mohammedanism and Mecca the heart. Two Arab missionaries visited this region. They were hungry, so they cut up a sheep and put it on the fire to roast. While the meat was cooking, the pair planned their work. It was agreed that the one drawing the sheep's heart from the pot should go to Mecca, and that the one drawing the head should remain at Samarkand.

Samarkand is more than 6,000 years old and once, it is said, had a population of more than a million. To-day it has fewer than 60,000 inhabitants. The Persians once called it the hub of the universe. When Alexander the Great destroyed it, in 329 B.C., it was a prosperous city on the great caravan route to China, a metropolis surrounded by a 9-mile wall, pierced by 19 gates.

After the Russians took the city in 1868, they built a new city outside its western limits. The two settlements now lie on either side of a long, wide boulevard, shaded by tall poplars.

The native city is a labyrinth of narrow, crooked, dusty streets, bordered with dirty mud walls of courtyards and one-story houses. In the business blocks cluster rickety booths, cluttered with food and clothing. Bearded men and veiled women crowd the streets, dodging camels, donkeys, droshkies and high-wheeled carts, all mud-brown from the dust, while peasants, laden with produce from their farms and gardens, plod along to the public square.

Moslem Boys Go to School in Mosque Churches

Samarkand's *registan,* or public square, is one of the most famous in the world. It is the market place, parade ground, and meeting place for the inhabitants for demonstrations of rejoicing and protest. Paved with cobblestones, it is inclosed on three sides by mosques in which young Moslems are educated. The huge many-colored tile facades and melon-shaped towers, flanked with minarets, some towering 175 feet high, are splendid examples of Arabic architecture. Surrounding the courtyard inside each mosque are schools in whose cloisters, 10 by 12 feet, the students live with their instructors.

The fourth side of the square is occupied by ramshackle booths of odd pieces of lumber or tin, or strips of canvas on tall poles. These booths are filled with vegetables, fruits, and other commodities. Nearby are other booths where squat-

Sometimes he must meet serious national problems. A civil war once threatened over a proposal to substitute the violin and cornet for the musette and tambourine, which usually form the orchestration for Andorran fête dancing.

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SKETCH MAP OF SPAIN, SHOWING LOCATION OF ANDORRAN REPUBLIC ON THE FRENCH BORDER

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The Aleutians Once More Serve as Milestones for Aviators

THE Soviet airplane flying from Moscow to New York first reached United States territory when it landed on the island of Attu.

Again the Russian airmen took the air and flew nearly 1,000 miles, but they found themselves still distant from the Alaskan mainland. The pilot brought his craft down to a safe landing at Dutch Harbor on Unalaska Island.

Five years ago the Aleutian Islands first served as milestones for aviators when the United States Army Around-the-World flyers followed them in the opposite direction.

Dutch Harbor on Great Circle Short Route

So little is heard of this far-flung island chain of Uncle Sam's that misconceptions about it are rife. Unalaska is frequently referred to as "a village on the coast of Alaska." In fact, it lies on an island which is separated from the westernmost tip of the Alaskan mainland by more than 150 miles. It lies 500 miles farther west than Honolulu.

Unalaska is among the largest of the Aleutian Islands. Dutch Harbor, the island's chief community, is port of call for vessels plying between Seattle and Nome. This harbor has deep water at its wharves and a protected anchorage that could accommodate the largest battle fleet. The shortest sea route between Seattle and Yokohama (the great circle route) lies practically through Dutch Harbor, and it may some time become an important coaling and provisioning point. Because of the dangers from fogs and rocks, however, ships now swing well south of the Aleutians. Only a few natives and whites live at Dutch Harbor.

The Aleutians were born of volcanic action, and the activity is not yet spent. Bogoslof Island, some 50 miles from Dutch Harbor, is continually changing its form, rearing one smoking promontory after another above the waves. It is, in truth, a submerged active volcano.

Far-Flung Volcanic "Necklace"

On the whole, the Aleutian chain is one of the longest and straightest single lines of volcanoes in the world. Within the last few years observers have extended the eastern end of the chain nearly 100 miles by determining the volcanic character of Spurr, a cone near the head of Cook Inlet, Alaska. From this point the chain swings in a great flat crescent 1,400 miles to the southwest, embracing in this tremendous sweep some fifty known volcanoes and a score or more of reported or suspected ones.

Volcanoes are to be found in the Aleutians in every stage of development: young and aged volcanoes, active and dormant volcanoes, cones whose symmetry rivals that of Fujiyama, and the jagged stumps of mountains that have been blown to bits by recent volcanic explosions. Volcanologists consider it one of the best known fields for the study of the problems of volcanism.*

Near the eastern end of the chain, in the Alaska Peninsula, is the Katmai National Monument and the Valley of Ten Thousand Smokes, a vast region of

*"Mapping the Home of the Great Brown Bear," by Dr. Thomas A. Jaggar (31 illustrations), *National Geographic Magazine*, January, 1929.

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ting natives sip coffee, smoke cigarettes, and gossip. As a public information bureau, the oriental cafe serves the purpose of newspapers. Fortune tellers, professional letter writers, and peddlers ply their professions where they find a shady place to sit. The *registan* also is the Samarkand employment agency.

From an elevated position above the surging mass of humanity, the riot of color suggests that the natives vie with the rainbow and each other. A man will go hungry for a single garment of brilliantly colored material. Green, red, purple, and yellow in all their hues will be seen on the same garment.

The Old Jail Pit from Which No Prisoner Came Out

In a secluded spot in the old city, perhaps a half-mile from the *registan*, is the tomb of the mighty Tamerlane, conqueror of Asia. It is an architectural gem, its graceful peacock blue dome rising above the dusty tree tops.

A large park in the center of the Russian quarter is the hub of the new city from which wide, well-shaded streets radiate in all directions. They are all paved to the city limits. Then they become mere trails in the desert. Some pass through masses of ruins of Samarkand when it was at the height of its prosperity. One of these roads leads to the citadel, situated on a hill between the two cities. Its wall incloses a subterranean prison, an immense dark chamber about 30 feet deep. Prisoners were let down by ropes, and it is said no one ever came out of it. Grooves worn by the ropes can still be seen. The Russians abolished the old-fashioned method of punishing the offenders and have built clean and well-ventilated jails.

Bulletin No. 3, October 21, 1929.

© *Photograph by Graham Romeyn Taylor*

SAMARKAND MELONS HAVE BEEN FAMOUS FOR CENTURIES

Merchants squatting in the market square tie up their melons with rushes for transport. In ancient times such melons were carried by caravan to China for the special pleasure of the emperor and his court.

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Where Hurricanes Are Born

MOST of the so-called West Indian hurricanes, such as that which recently swept the Bahamas, come into existence over the warm seas somewhere between the West Indies and the coast of Africa.

First Gentle Eddies, then Gigantic Whirls

They are probably gentle little eddies of air at first, but gather momentum owing to differences in temperature and air pressure, until they become gigantic whirls sucking air like giant vacuum cleaners.

The observer in the path of a hurricane can hardly believe that these destructive winds are swirls. He sees the effects of and feels a straight blast of air moving at great speed, overturning ships, trees and buildings. If he watches long enough, he will see this destructive blast almost completely reverse its direction. These winds are created by the pumping force of the central swirl; and while the center itself may be moving across country at the leisurely rate of 8 or 10 miles an hour, the winds rushing inward from all directions to disappear up the "spout" reach terrific speed. The usual maximum speed is 100 miles an hour. The fact that the hurricane last year at San Juan, Porto Rico, blew at a rate of 132 and perhaps 150 miles an hour stamps that storm as of extraordinary violence.

Why Hurricanes Often Come in Early Autumn

The routes followed by West Indian hurricanes in general are similar, but the storms differ much in their detailed paths. They are born in the region of the trade winds. All of them first move westward, as the trade winds move, and most of them later turn northward.

Many hurricanes make their turn northward well east of Porto Rico. A good many others strike south of that island as well as southward of Haiti and Cuba. But there have been all too frequent occasions when the storms have driven straight across Porto Rico or its island neighbors.

No Hurricanes in June for Forty Years

Since hurricanes are formed by the interaction of heat and atmospheric pressure, the summer months and those of early autumn, when the accumulating effects of the summer sun are still to be felt, are naturally the periods when hurricanes are most likely to blow. Porto Rico, for example, has not experienced a hurricane in June during the past forty years, as shown by a study by the United States Weather Bureau. Only one or two have occurred in July. In August, September, and October, however, the island has repeatedly suffered in varying degree from these destructive storms.

Bulletin No. 5, October 21, 1929.

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steaming vents, boiling pools, and smoking hills, which came into existence suddenly with the explosion of Mt. Katmai in June, 1912. In 1916 and subsequent years expeditions of the National Geographic Society explored this remarkable region and brought the first knowledge of its wonders to the United States.

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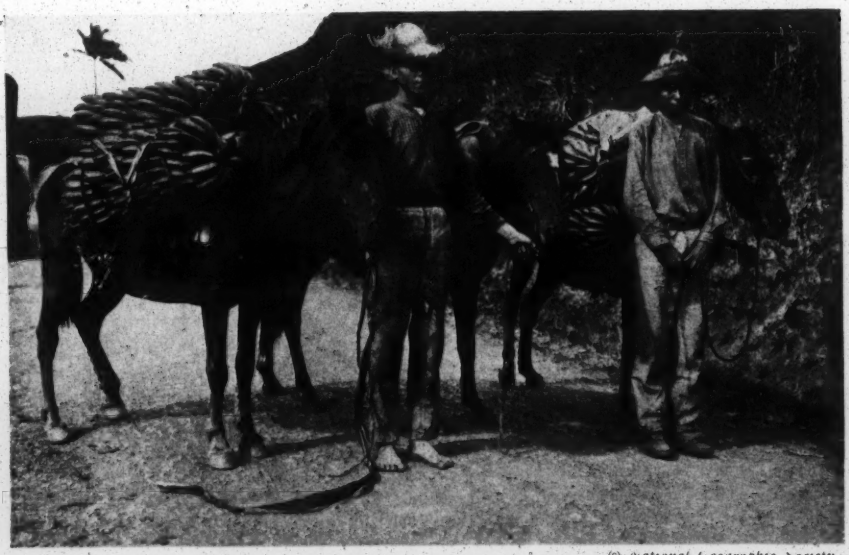
ALONG THE VOLCANIC COAST OF THE ALASKA PENINSULA

Dr. Thomas A. Jaggar in the summer of 1928 led a National Geographic Society expedition to the Alaska Peninsula for the study of the Pavlof Volcano group. For their operations the expedition used an amphibian. The motor boat in this picture has wheels with which to roll along the level beach. Dr. Jaggar now is at his observatory in Hawaii keeping a close watch on the great volcanoes of the islands which are expected to spout lava, following recent earthquakes.



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PORTO RICO BANANAS EN ROUTE TO MARKET

Porto Rico, along with other islands of the West Indies, has suffered so frequently from fall hurricanes that owners of big plantations take out hurricane insurance on their crops. When the Island's sugar, coffee, and tobacco crops were seriously damaged by last year's hurricane, crop insurance helped the islanders to get back on their feet financially.

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